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PINUS CLAUSA (PINACEAE) ADVENTIVE IN TEXAS

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ABSTRACT

An adventive population of *Pinus clausa*, sand pine, is reported in the Post Oak Savanna of Henderson County, Texas. About 25–30 individuals are present at the site but there is no evidence of how they arrived.

KEY WORDS: Pinaceae, *Pinus clausa, Pinus*, adventive, Post Oak Savanna, Texas, U.S.A.

Pinus clausa (Chapm. ex Engelm.) Vasey ex Sarg., sand pine, is a fire successional in sandy dunes and sandhills (Kral 1993). The species was mapped as native and endemic to Florida (central peninsula and western part of the panhandle) and adjacent Baldwin Co., Alabama (Little 1978). USDA, NRCS (2012) also included Pike County in the Alabama distribution, but without comment. The Mississippi Natural Heritage Program cites the species as native to Jackson County of that state (Mississippi Museum of Natural Science 2007). Weakley (2011) mentions that the species is "widely planted in pulp plantations in FL and s. GA, experimentally planted as far north as NC." Duncan and Duncan (1988) reported the species is "reproducing naturally in s GA." The species is not an important timber tree because of small size (up to 21 m tall) and profuse branching, but it is important for pulpwood production (Kral 1993).

Based upon the specimen cited below, *Pinus clausa* is reported here as adventive to Texas. Approximately 25–30 reproductive individuals (serotinous cones) of *Pinus clausa* were present at the site, these being from 20–30 cm diameter at breast height (ca. 137 cm) and 7–9 m tall. Based on site descriptions and silvics of natural stands in Florida (Schumacher & Coile 1960; USDA, USFS 1965) and other engineered stands (Burns 1978; Hebb 1982) upper age estimates at this Texas site were determined to be about 35-40 years of age, with other age classes occurring. Seedlings were interspersed among the age classes, but there was no evidence as to how the plants may have arrived.

Voucher specimen. **Texas**. Henderson Co.: Clements Scout Ranch, 0.3 mi. N of jct. of FM 2970 and Co Rd 1116 on FM 2970, E through entrance of camp 0.1 mi., then NE on sand road 0.3 mi. (32° 5'51.46"N, 95° 53'38.50"W), deep sandhills, 27 Sep 2006, *Jason R. Singhurst & Edwin Bridges 16031* (BAYLU). Figs. 1–3.

Figure 1. Close-up of *Pinus clausa*. Voucher with serotinous ovulate cone. (*Singhurst & Bridges 16031*, BAYLU).

The specimen is from the Post Oak Savanna and area of deep sands located to the west of the Pineywoods of deep east Texas. This savanna can generally be characterized as a *Quercus stellata—Q. marilandica* overstory and an understory of grass, chiefly *Schizachyrium scoparium* (in Diggs et al. 2006). At this locale *Quercus incana* was a common overstory species. The area of occurrence was void of other woody plants and dominated *by Aristida desmantha, Croptilon divaricatum, Eriogonum multiflorum, Liatris elegans subsp. bridgeii, Matelea cynanchoides, Paronychia drummondii, Polanisia erosa, Penstemon murrayanus, Rhododon ciliatus,* and *Triplasis purpurea.*

Because of the short needles (to 10 cm long), *Pinus clausa* would key to *P. echinata* Mill. in Correll and Johnston (1970) and Diggs et al. (2006). This similarity is superficial, however, as *P. clausa* is said to be more closely related to *P. virginiana* Mill., *P. banksiana* Lamb., and the *P. contorta* Douglas ex Loudon complex (Weakley 2011). *Pinus clausa* and *P. echinata* may be distinguished by use of the following key, which is adapted from Duncan and Duncan (1988), Kral (1993), and Wunderlin (1998).

1. Twigs roughened and cracking below leafy portion; bark plates with evident resin pockets; leaves mostly ca. 1 mm wide; tips of seed cone scales without a conspicuous horizontal ridge; inconspicuous light-colored band located distally on adaxial surface of ovulate scales ..... **Pinus echinata**
1. Twigs smooth below leafy portions; bark plates lacking resin pockets; leaves mostly 0.5–less than 1 mm wide; tip of seed cone scales with a conspicuous horizontal ridge; conspicuous dark red-brown to purple band located distally on adaxial surface of ovulate scales ..... **Pinus clausa**

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Pinus clausa (Chapm. ex Engelm.) Vasey ex Sarg.
Henderson Co.: Clements Scout Ranch, 0.3 mi N of jct. of FM 2970 on Co Rd 1116 on FM 2970, E through entrance of camp 0.1 mi, then NE on sand road 0.3 mi. (32° 5' 51.56" N, 95° 53' 38.50" W; deep sandhills dominated by Aristida desmantha, Croptilon divaricatum, Eriogonum multiflorum, Liatris elegans var. bridgesii, Matelea cynanchoides, Paronychia drummondii, Polanisia erosa, Penstemon murrayanus, Rhododon ciliatus, and Triplasis purpurea
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Figure 3. *Pinus clausa*. Henderson Co., Texas (*Singhurst & Bridges 16031*, BAYLU).

Figure 2. Adaxial aspect of *Pinus clausa* ovulate scales. (*Singhurst & Bridges 16031*, BAYLU).

Pinus clausa is the second species of the genus known to be introduced to east Texas, the other being *P. elliottii* Engelm. (Diggs et al. 2006). *Pinus echinata* Mill., *P. taeda* L., and *P. palustris* Mill. are native east Texas pine species.

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LITERATURE CITED

Burns, R. M. 1978. Evaluation of a Choctawhatchee sand pine plantation at age 35. USDA Forest Service, Research Paper SE-183. Southeastern Forest Experimental Station, Asheville, North Carolina.

Correll, D.S. and M.C. Johnston. 1970. Manual of the Vascular Plants of Texas. Texas Research Foundation, Renner, Texas.

Diggs, G.M., Jr., B.L. Lipscomb, M.D. Reed, and R.J. O'Kennon. 2006. Illustrated Flora of East Texas. Vol.1. Sida Bot. Misc.26, Bot. Res. Inst. of Texas, Fort Worth.

Duncan, W.H. and M.B. Duncan. 1988. Trees of the Southeastern United States. Univ. Georgia Press, Athens.

Hebb, E.A. 1982. Sand pine performs well in the Georgia-Carolina sandhills. Southern Journal of Applied Forestry 6: 144–147.

Kral, R. 1993. *Pinus*. Pp. 373-398, *in*: Flora of North America Editorial Committee, Flora of North America Vol. 2. Pteridophytes and Gymnosperms. Oxford Univ. Press, New York.

Little, E.L., Jr. 1978. Atlas of the United States Trees. Vol. 5, Florida. U.S. Dept. Agric. Misc. Publ. 1361, U.S. Government Printing Office, Washington, D.C.

Mississippi Museum of Natural History. 2007. Checklist of plants of Mississippi: Gymnosperms. Mississippi Dept. of Wildlife, Fisheries and Parks, Jackson.

Schumacher, F.X. and T.S. Coile. 1960. Growth and yields of natural stands of southern pines. T.S. Coile, Inc., Durham, North Carolina.

USDA, NRCS. 2012. The PLANTS Database. National Plant Data Team, Greensboro, North Carolina. <http://plants.usda.gov> Accessed February 2012.

USDA, USFS. 1965. Silvics of Forest Trees of the United States. H.A. Fowells (comp.). U.S. Department of Agriculture, Agriculture Handbook 271. Washington, D.C.

Weakley, A.S. 2011. Flora of the Southern and Mid-Atlantic States. Working draft of May 2011. Univ. of North Carolina Herbarium (NCU), Chapel Hill. <http://www.herbarium.unc.edu/WeakleyFlora2010Mar.pdf>

Wunderlin, R.P. 1998. Guide to the Vascular Plants of Florida. Univ. Press of Florida, Gainesville.